1. B	6. B	11. B	16. B	21. B	26. A
2. A	7. B	12. A	17. A	22. D	27. B
3. B	8. D	13. B	18. C	23. D	28. C
4. C	9. B	14. B	19. E	24. A	29. A
5. C	10. C	15. A	20. D	25. B	30. E

The following were changed at the resolution center at the convention: 10 E

1. The solution set for the inequality is $\left(-6, 22/3\right)$. This set contains $5+1+7=13$ integers.
2. $g(3)=2$ and $f(2)=-3/2$
3. $144=2^4 3^2$. Equate and solve a simple system to get $x=3, y=-1$.
4. We have $x=\frac{f^{-1}(x)}{3f^{-1}(x)+4}$. Solving for $f^{-1}(x)$, we get $f^{-1}(x)=\frac{4x}{1-3x}$
5. Cross-multiplying, we have: $2x+11=A(x+2)+B(x-1)$. Setting $x=1,$ we see that $A=13/3$. Setting $x=-2,$ we see that $A=-7/3$. $A-B=20/3$
6. We can subtract the area of the triangle formed by $y=\frac{1}{2}x,$ $y=-2x+10,$ and the *x*-axis from the area of the triangle formed by $y=3x,$ $y=-2x+10,$ and the *x*-axis. By finding where the lines intersect, we can easily calculate the area to be: $15-5=10$.
7. Factor: $x^2-x-y^2-y=(x+y)(x-y-1)=0$. The equation holds if and only if $(x+y)=0$ or $(x-y-1)=0$. These two lines intersect at $(1/2, -1/2)$
8. Write $\frac{z+3}{z-3}-3<0$. Simplifying, we get $\frac{6-z}{z-3}<0$. Checking to the left and rights of $z=3$ and $z=6$, we see that the solution set is $\left(-\infty,3\right)\cup(6,\infty)$.
9. Vectors are perpendicular if their dot product is 0. $\left\langle x+3, x-3\right\rangle \cdot \left\langle x-3, x+1\right\rangle=(x+3)(x-3)+(x-3)(x+1)=(x-3)(2x+4)=0$. Sum: $3+(-2)=1$.
10. The only real solutions are 1 and -1.
11. The area of the fence will be: $x\cdot(100-2x)$, where *x* is the length of one of the two sides not opposite the wall. This parabola achieves maximum value when x=25. At x=25, the maximum value (area) is 1250
12. If *a* and *b* are the roots, then $a+b=12$, or $a^2+a=12$. So *a* can be 3 or -4. Then *c* would be 27 or -64.
13. Both numerator and demonimator have the same degree, so we take the ratio of the leading coefficients. -4/3
14. The third side length must be greater than 10 and less than 30. There are 19 such integers.
15. The circle is centered at the origin. The point lies outside. The shortest distance is thus the radius subtracted from the distance from (0,0) to the point. 5-2=3.
16. $\binom{6}{4}\left(x\sqrt{2}\right)^4\left(\frac{\sqrt{c}}{x^2}\right)^2=15\cdot 4c=60c=120$. *c=2*
17. $\left(x+\frac{1}{x}\right)^2=9=x^2+\frac{1}{x^2}+2$. So $x^2+\frac{1}{x^2}=7$. $\left(x^2+\frac{1}{x^2}\right)\left(x+\frac{1}{x}\right)=21=x^3+\frac{1}{x^3}+x+\frac{1}{x}$. So $x^3+\frac{1}{x^3}=21-3=18$. Similiarly, we find $x^5+\frac{1}{x^5}=18\cdot 7-3=123$.

18. Determinant is $1(-x)-x(x^2-x^2)-1(x)=-2x$. It equals 1 only when x=-1/2.

19. $-y-10<3y+6 \Rightarrow y>-4$. $3y+6\le 4y-2 \Rightarrow 8\le y$. The intersection occurs when $y\ge 8$.

20. $B=4A$ and $B+8=2(A+8)$. A=4, B=16

21. $\sqrt{m+\sqrt{m+\sqrt{m+\cdots}}}=10=\sqrt{m+10} \Rightarrow m=90$.

22. Zeros are 1, -1, -4, 5. Testing to the left and right of each zero, we find: $[-4,-1]\cup[1,5]$

23. Sum of the coefficients of f(x) is f(1), or $f(3\cdot 2-5)=2^4+2^3-3\cdot 2+7=25$

24. Constant term is f(0), or $f(4\cdot -2+8)=2(-2)^3+2(-2)^2-3(-2)+5=3$

25. Maximum is $\sqrt{1^2+2^2}$

26. $2^0+2^1+2^2+\cdots 2^n=2^{n+1}-1=1023$. n=9

27. $f(x)=\dfrac{1}{3}x+2$. f(x)=5 when x=9

28. A square root function can only take non-negative numbers, so ln x must be non-negative. This holds for all x >= 1.

29. We need $kx=x^2-x+16$ to have one solution. So the discriminant must be 0. The discriminant is $(k+1)^2-64$. This is 0 when k=7 and -9. Sum is -2.

30. $1=\sin^2 x+y^2$ can be rewritten as $\cos^2 x-y^2=0$, or $(\cos x-y)(\cos x+y)=0$. The graph is thus the graphs $y=\cos x$ and $y=-\cos x$.